Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

U. S. DEPARTMENT OF AGRICULTURE • FOREIGN AGRICULTURAL SERVICE • JULY 1972 • FAS M-244

A281.9
.F76FM

U.S. Mint Oil in the European Market

USDA
NAT'L AGRIC LIBRARY
2001 NOV 10 A 12: 30
CURRENT SERIAL RECO
ACQ/SERIALS BRA

FOREWORD

The author collected the data for this report while on trips to the United Kingdom, France, West Germany, and the Netherlands and to the mint areas of the United States. Since the European market for U.S. mint oil had not been systematically studied recently, it is hoped that this report will help fill the need for information on this subject. The report is designed to enable the U.S. mint oil industry to further develop the European market and to better understand the problems in this important market.

Europeans tend to use relatively more mint oil in dentifrices than in chewing gum. This is the reverse of the use within the United States where chewing gum consumption is extremely popular. Since toothpaste requires a less long-lasting mint flavor than chewing gum, the European market furnishes a good outlet for low-priced U.S. mint oils.

The United States is an efficient producer of mint oil and has no rival in the world market for good quality oil in ample quantity. Great strides have been made in U.S. mint oil technology in an effort to keep costs under control. This battle continues, and further gains are promised.

The European market for U.S. mint oil has been expanding at a rate of over 3 percent, annually. There is no reason why this rate cannot be increased in the future. In addition to a description of the export situation for U.S. mint oils in Europe, a list of trade associations both in the United States and in Europe has been incorporated in this report.

The author gratefully acknowledges the cooperation of producers, marketing associations, university and extension personnel, exporters, importers, end-users, and government personnel in the countries covered. The help of the U.S. Agricultural Attachés and their staffs in the countries surveyed and in Brussels—the headquarters of the European Community (EC), also was invaluable.

Leslie C. Hurt, Acting Director
Sugar and Tropical Products Division

CONTENTS

1 Introduction

1 Domestic Industry

2 Peppermint Oil
2 Domestic production
5 Internal consumption
5 Foreign trade

8 Spearmint Oil
8 Domestic production
10 Internal consumption
11 Foreign trade

12 Marketing Channels

14 The European Market
14 The United Kingdom
14 Peppermint oil
17 Spearmint oil

18 France
18 Peppermint oil
19 Spearmint oil

20 West Germany
20 Peppermint oil
22 Spearmint oil

22 The Netherlands
22 Peppermint oil
23 Spearmint oil

24 The Potential for Expanding U.S. Exports to Europe
24 Price and Quality Considerations
24 Third-country Factors
25 Problems
25 Anticipated Exports

25 Conclusions

28 Appendix

U.S. Mint Oil in the European Market

By Gordon E. Patty

Introduction

The United States is the world's leading producer of peppermint and spearmint oil. Brazil furnishes some competition in the export markets with its low-quality peppermint oil known as cornmint. Mainland China produces relatively small quantities of low-priced mint oil. The leading markets are in Europe and Japan. World demand for mint oil has increased fairly steadily and world supplies have kept pace. The major uses for mint oils are as flavoring ingredients in chewing gum and toothpaste. Sales of both toothpaste and chewing gum have increased rapidly in recent years. The developing countries are likely to show the most market growth in future years, and new uses for the two oils are possible.

Mint (excluding cornmint) generally is a temperate zone crop and needs long days of sunshine during the growing season. Therefore, it is usually grown at latitudes of 35 to 40 degrees or over. Muck or sandy-loam are the best soils. Disease is a major problem. In the United States, production has tended to move westward into disease-free areas. At present, it is produced mainly in the Northwest and, to a lesser extent, in the Midwest.

Mint growing in the United States is a highly technical, large-scale operation. U.S. production costs are increasing, but the United States remains the center of the world's mint industry. This will likely be the case in the foreseeable future, providing the U.S. price remains competitive and a concerted effort is made to develop markets, both in the United States and abroad.

Domestic Industry

The production of U.S. mint oils—peppermint and spearmint—has risen steadily for many years. Output of these two oils has about doubled since 1957. The export market is important to the U.S. mint industry, furnishing an outlet for 37 percent of U.S. mint oil production during 1967–69.

Throughout its history the domestic mint industry has tended to move westward. From its beginnings in New England, it moved west to New York, Ohio, and Michigan. Mint once was grown mostly in muck soils such as are found near Lake Michigan, but after wilt disease hit hard it moved to the sandy loams of the Northwest beginning about 1913.

Since mint needs long days of sunlight, it has always been grown most successfully in the northern part of the United States. After the great outbreak of wilt in the Midwest, the center of U.S. mint production moved to the Far West, particularly Oregon and Washington, where high yields per acre encouraged farmers to plant more mint. New irrigation methods and mechanical devices have helped the cost situation. Spearmint has become highly concentrated in the Yakima Valley area of south-central Washington where it can be cut twice in 1 year because of the long days during the summer growing season. Peppermint, on the other hand, is grown much more widely and is, therefore, less subject to broad yearly fluctuations in national output than spearmint.

During the depression of the 1930's, U.S. consumption of mint oils held steady and export de-

mand increased until 1939 when nearly one-half of the U.S. crop entered the overseas market. European usage during this period grew, but production failed to increase. When World War II came, U.S. needs grew and prices increased rapidly. Demand for menthol—a byproduct of peppermint oil —was great but the high price of U.S. menthol forced users to look to Latin America for a new source.

The U.S. peppermint oil industry underwent a fairly steady expansion after World War II. Prices reached relatively high levels during 1965–68, which resulted in increased plantings by growers beginning in 1966. Yields were exceptionally high in 1967, amounting to 71 pounds per acre, compared with an average of 57 pounds during the 1962–66 period. Production has continued at high levels since 1967, resulting in increased supplies for export. The recent history of the spearmint industry has been similar to that of peppermint (Tables 1, 3, 4, 9, 10 and 11).

To maintain the future health of the industry, overseas markets should be expanded.To accomplish this, more needs to be known about the domestic industry, the industries of competing countries, and the overseas markets as represented principally by Europe. Studies of these factors will help assess the potential for expanding exports of U.S. mint oil.

Peppermint Oil

Domestic Production

Although most U.S. production of peppermint oil now comes from the Northwest, the highest-priced oil is still produced in the Midwest. Peppermint, which needs long days of sunlight, usually is produced north of the 40th parallel. It also is preferable to have low rainfall at harvest time. The major peppermint growing areas in the Northwest are the Yakima Valley and Columbia Basin of Washington and the Willamette Valley and Madras Plateau of Oregon.

U.S.-produced peppermint (Mentha piperita) used to be grown commercially in two varieties, Mitcham and American. Mitcham now is the only commonly grown variety in the United States because of its high yields.

Mentha arvensis (cornmint) type grown in Brazil and Japan is a good source of menthol, but produces a lower-quality oil. This mint also is known as Japanese mint or fieldmint. Cornmint possesses a bitter and harsh taste in comparision with the U.S. product. Any product containing cornmint or fieldmint destined for use within the United States is required by law to be so labeled.

Prices received by U.S. farmers for peppermint oil generally increased from 1957 until 1967, but decreased thereafter until 1971 (Table 1). Much of the 1967–70 decline was due to cyclic factors but can be expected to readjust as acreage and output respond to higher prices. The price for Washington peppermint oil usually has been lower than that produced in other states. Midwest peppermint oil has drawn higher prices, generally, than Northwest oil.

Yields are gradually increasing and producers in the mint-growing areas are experiencing difficulty in finding alternative crops. In Washington, wilt disease in the old growing areas, particularly the Yakima Valley, has encouraged a shift from peppermint to spearmint which is less susceptible. Central Washington oil is high in the aromatic compound—menthofuran—due to the profuse flowering of plants grown in areas of long, warm, and sunny days.

Since mint is a perennial and often is grown several years in the same field, production does not respond to price changes immediately. Furthermore, the yield usually is lower in the first year of production than in the succeeding years. The farmer usually can expect to see his costs exceeding his price received per pound in the first year (Table 2).

Although comparable figures are difficult to find, it appears that costs of production generally have been increasing. A 1963 study by the USDA indicated that costs per acre were about $290 for the first year in the Northwest and $225 for subsequent years. By 1968, these costs in the same area were approximately $425 for the first year and $355, subsequently. Farmers' gross returns apparently have not been increasing as rapidly as their costs. This implies that new ways of cutting costs must be found, unless the prices farmers receive rise enough to give them a fair return.

Labor requirements have decreased as new technological breakthroughs have brought new efficiencies in recent years. For example, less hand weeding is now being done. At the same time, however, labor costs per hour are higher. Farm wage rates have increased rapidly in the United States as can be seen from the following index:

Year	Index 1967 = 100
1961	76
1962	78
1963	80
1964	82
1965	86
1966	94
1967	100
1968	110
1969	121
1970	129

Many other costs also have risen. Fertilizer usage has gone up significantly. Propane flaming for rust control is about $9.00 per acre in Oregon while herbicide costs are now over $20.00 per acre. Fixed costs also are much higher. Farmers must have their own equipment for distilling oil from the mint plants or they must have it done by neighbors. The initial cost of distilling equipment exceeds $50,000. The custom rate for both harvesting and distilling peppermint oil in the Columbia Basin was about 85 cents per pound in 1968.

The main factors affecting quality are the time of harvest, climate, seasonal weather conditions, and cultural methods. Proper attention also must be paid to fertilization, disease and insect control, and soil conditions. In addition, weed control is important because improper weed control results in relatively high weed content in the oil in some areas. The weed problem is compounded during rainy growing seasons when weeds tend to grow more profusely.

Yields generally have been increasing in the United States, but are higher in the Northwest than in the Midwest. Cultural methods are impor-

Table 2.—Peppermint oil: Cost of production, Columbia Basin, Washington, 1968

[In dollars per acre]

Cost	First year	Second to fifth year
Planting:		
Fertilizer	29.50	—
Plants (roots)	33.00	—
Digging and hauling roots [1]	40.00	—
Planting [1]	22.00	—
Other	13.87	—
Growing:		
Cultivation	30.08	25.50
Irrigation	15.00	15.00
Fertilizer	17.75	42.75
Insect and disease control	21.02	32.42
Weed control	21.58	18.58
Other	14.40	17.22
Harvesting	63.00	76.91
Overhead:		
Investment overhead	52.20	82.99
Taxes	10.00	10.00
Water	12.00	12.00
Interest	13.00	10.00
General overhead	17.02	12.00
Total cost per acre	425.40	355.37
Cost per pound [2]	6.08	4.18

[1] Producers with limited acreages of peppermint usually must hire these operations on a custom basis.

[2] Based on an average yield of 70 pounds per acre for the first year and 85 pounds per acre for established stands in the Columbia Basin during 1964–68.

Source: *Estimated Costs and Returns When Establishing and Producing Peppermint in the Columbia Basin, Washington*, by Samuel M. Doran and Edward M. Forster, Washington State University, Cooperative Extension Service, EM3086, Pullman, Washington, May, 1969.

Table 1.—Peppermint oil: Prices received by farmers, by producing States, average 1957–61 and 1962–66, annual 1967–71

[In dollars per pound]

State	Average		1967	1968	1969	1970	1971
	1957–61	1962–66					
Indiana	5.72	7.48	8.20	7.80	6.60	4.50	4.50
Michigan	5.54	7.48	8.30	7.70	6.60	4.25	4.20
Wisconsin	5.58	7.52	8.20	7.70	6.70	4.50	4.30
Idaho	(1)	4.72	5.20	4.90	4.50	3.15	3.80
Oregon	4.52	5.38	5.80	5.00	4.80	3.45	3.80
Washington	3.22	4.09	4.65	4.40	4.10	3.80	3.67
United States	4.15	5.09	5.53	5.15	4.78	3.68	3.87

[1] Not available.

Table 3.—Peppermint oil: Production, by State, averages 1957–61 and 1962–66, annual 1967–71

[In thousands of pounds]

State	Average		1967	1968	1969	1970	1971
	1957–61	1962–66					
Indiana	219	206	234	220	234	315	272
Michigan	76	56	59	61	58	48	30
Wisconsin	172	141	238	271	313	443	296
Idaho	(1)	84	206	260	371	408	296
Oregon	932	989	1,764	1,829	2,232	2,584	2,111
Washington	1,064	1,178	2,070	1,462	1,394	1,169	687
Total	2,463	2,654	4,571	4,103	4,602	4,967	3,692

[1] Not available.

Table 4.—Peppermint oil: Quantity available for consumption, United States, 1957–71

Year	Production	Exports	Imports [1]	Available for consumption [2]
	1,000 pounds	*Pounds*	*Pounds*	*Pounds*
1957	2,363	837,992	28,261	1,553,269
1958	2,575	798,674	26,355	1,802,681
1959	2,472	932,359	39,002	1,578,643
1960	2,233	1,003,766	63,636	1,292,870
1961	2,670	1,001,504	149,344	1,817,840
1962	2,382	1,185,551	155,945	1,352,394
1963	2,387	1,046,275	252,672	1,593,397
1964	2,552	1,350,396	276,053	1,477,657
1965	2,667	1,474,613	315,698	1,508,085
1966	3,283	1,383,977	409,235	2,308,258
1967	4,571	1,505,458	374,798	3,440,340
1968	4,103	1,878,427	261,641	2,486,214
1969	4,602	1,655,037	337,500	3,284,463
1970	4,967	1,951,131	335,300	3,351,169
1971	3,692	2,540,023	244,241	1,396,218

[1] Includes both peppermint and cornmint oil.

[2] Indicates the amount of peppermint oil available for domestic consumption from the current crop. Stock data is unavailable.

tant in determining yields, because, if the mint plants are too thickly planted, yields will be lowered. Yields also will be low when there is cloudy, wet weather just before the harvest, as this prevents the plant from properly developing its oil.

Mint oil is removed from the plant by passing steam through the partially-dried hay to vaporize the oil. The vapor is then condensed and the oil floats to the surface where it is separated from the water. A second distillation may be made if necessary to improve quality. The oil may be stored in a cool place for a long period if free of moisture and packed in clean, tight containers.

Production of peppermint oil has risen rapidly in the United States. More irrigated land is becoming available where mint can be grown. In addition wilt disease is becoming less of a limiting factor in mint production. U.S. peppermint oil average annual output almost doubled between 1957–61 and 1967–71 (Table 3). The biggest overall gains during this period were made in Oregon with lesser ones in Idaho, Washington, and Wisconsin. New outlets will have to be found if the U.S. mint industry is to remain healthy.

Internal Consumption

Total domestic use of peppermint oil (not counting stock changes) almost doubled during the 10 years prior to 1971 (Table 4). The amount of oil available for consumption, including imported oil, increased from an annual average of 1.6 million pounds in 1957–61 to 3.0 million pounds during 1966–70. The rate of increase in per capita consumption of peppermint oil rose considerably more during this period than U.S. population. About 62 percent of U.S. production of peppermint oil went into the domestic market during 1957–61. The percentage going into domestic use in 1966–70 was nearly the same.

Since peppermint and spearmint oil both are used as flavoring ingredients the demand for the final products is important. The demand for mint oil can be considered a derived demand, as the amount used depends on the demand for the final products in which the mint oil is an ingredient. Chewing gum sales have gone up steadily in the United States, increasing from $207 million in 1963 to $373 million in 1967 (f.o.b., manufacturing plant). During the same period, toothpaste sales rose 34 percent to $235 million. Some peppermint oil also is used in mouthwashes, sales of which now exceed $100 million.

Lesser amounts of peppermint oil are used in confectionery and for other purposes. In 1971, estimated domestic use of all peppermint oil available for consumption was as follows:

Use	*Percent*
Chewing gum	55
Toothpaste and mouthwash	34
Confectionery	10
Other uses	1
Total domestic use	100

Imports of cornmint and peppermint oil amount to between 5 and 10 percent of U.S. production, annually. In addition, several other flavoring materials are available that can be substituted for U.S. peppermint oil in toothpaste, mouthwash, and confcctionery. As previously mentioned, any product containing cornmint, or fieldmint, is required to be so labeled by the Federal Food, Drug, and Cosmetic Act.

Foreign Trade

The United States exported 2.5 million pounds of peppermint oil valued at $12.2 million in 1971 (Table 5). Exports amounted to 38.9 percent of U.S. production during 1966–70, about the same percentage as in 1957–61. Over one-half (52.3 percent) of these exports went to the European market during 1966–70. Almost one-fourth of the total now goes to Japan. Mexico and Canada are other sizable markets. Australia, South Africa, Guatemala, and Colombia also are markets of note.

The Japanese market has made the largest gain —some 200 percent over its 1962–66 annual average. Japanese trade teams have been actively seeking mint oil supplies in the United States. Japan once was a sizable producer of pcppermint oil, but its output no longer can compete with U.S. production. This market probably will level off in the near future.

The following compares by regions the increase in U.S. exports of peppermint oil in 1971 over the 1962–66 average:

	Change, 1962-66 average to 1971
	Percent
Europe	+74.9
North America	+62.6
South America	+60.3
Asia/Oceania	+206.6
Africa	+42.6
Total exports	+97.2

The Asia/Oceania increase is accounted for mainly by Japan. Good gains were made in both Mexico and Canada as well as several Central Amcrican countries.

Europe's increase was considerable. It has been a reliable market and will continue to be important in the mint export picture. Population in Western Europe has increased by about 8 percent during the past decade. Its gross national product rose by roughly one-third (in constant dollars) from 1964 to 1970.

It appears that a considerable amount of the U.S. peppermint oil exported is Yakima oil, or

Kennewick oil, from Central Washington. The two names are interchangeable. Washington oil is lower-priced than oil from any other State (Table 1). The chewing gum and toothpaste industries in the United States are said to exclude Yakima oil almost completely. However, the U.S. confectionery industry reportedly uses this oil because of its strong flavor burst, necessary in candy products.

The fundamental characteristics of mint oil are taste and odor. The export market demands consistent flavor as well as low prices from year to year. The Central Washington oil fits these needs.

Table 5.—Peppermint oil: U.S. exports, by country of destination, average 1962–66, annual 1967–71

[In pounds]

Country	Average 1962–66	1967	1968	1969	1970	1971
Netherlands	51,113	52,089	50,031	62,197	58,808	47,067
Belgium	9,599	4,100	8,257	3,710	3,862	3,800
France	176,034	203,636	278,499	230,981	296,251	390,373
West Germany	149,769	87,456	106,879	96,793	88,838	225,885
Italy	32,408	44,587	47,383	52,051	48,503	58,837
Total EC	418,923	391,868	491,049	445,732	496,262	725,962
United Kingdom	331,345	340,108	435,701	384,325	417,447	595,170
Sweden	18,693	15,284	14,948	13,509	19,538	23,493
Switzerland	21,246	23,600	38,933	29,521	44,110	17,842
Other	27,012	51,024	52,643	26,910	42,233	62,413
Total Europe	817,219	821,884	1,033,274	899,997	1,019,590	1,424,880
Canada	61,347	69,542	81,149	78,565	91,818	92,124
Mexico	63,377	69,134	119,934	74,094	125,898	107,685
Guatemala	8,894	11,580	12,120	11,644	23,066	11,008
Other	3,615	3,535	19,215	10,092	14,945	13,075
Total North America	137,233	153,791	232,418	174,395	255,727	223,892
Colombia	9,723	7,514	14,095	18,778	22,774	16,362
Venezuela	14,220	11,340	19,488	15,525	16,050	21,202
Brazil	7,864	5,578	17,413	8,101	5,973	11,955
Other	12,954	9,056	7,421	14,647	15,057	22,321
Total South America	44,761	33,488	58,417	57,051	59,854	71,840
India	9,293	.....	1,306	9,631	7,112	16,351
Israel	3,173	14,754	120	8,077	5,008	18,520
Philippines	7,614	2,906	5,820	9,426	13,870	15,514
Japan	149,057	332,396	397,487	358,608	458,933	566,607
Australia	53,507	50,877	68,631	55,300	55,460	82,324
Other	30,566	49,048	29,645	57,775	38,777	76,864
Total Asia/Oceania	253,210	449,981	503,009	498,817	579,160	776,180
Morocco	2,956	.....	4,139	1,600	.....	800
Republic of South Africa	25,734	30,876	47,170	23,177	36,800	40,431
Other Africa	1,650	.....	.....	.....	.....	2,000
Total Africa	30,340	30,876	51,309	24,777	36,800	43,231
Other countries	5,372	15,438	.....	.....	.....	.....
Total exports	1,288,135	1,505,458	1,878,427	1,655,037	1,951,131	2,540,023

It is high in menthofuran content, characterized by a strongly aromatic flavor. Yakima oil always has this same characteristic, allowing U.S. exporters to meet demands of overseas customers for consistency as well as low price. Various U.S. oils can be blended to coincide even closer with these requirements.

Yakima oil of peppermint from a recent crop was described by a leading U.S. exporter as containing:

Component	*Percent*
Total Menthol	52.5
Menthylesters	8.5
Menthone	19.9
Menthofuran	8.6

It was further described as being an average-quality crop, having had normal growing conditions that season. The Yakima Valley peppermint oil was said to have clean flavor characteristics and to enjoy large-volume usage in world markets.

Weed control was the major problem facing Yakima Valley farmers during that year. Current research is expected to provide adequate weed control on an economical basis in the near future.

The same export firm was advertising its other peppermint oils as having the following quantities of menthofuran:

Type	*Percent*
Yakima Select	6.3
Madras (Oregon)	2.8
Eastern Oregon and Idaho	3.8
Willamette (Oregon)	2.8
Midwest	2.9

The regular Yakima oil was described as having a menthofuran content of 8.6 percent, considerably above all of the export firm's other oils. It generally is lower in menthone than are the other oils, supposedly making it less harsh and bitter. It is high in menthylesters, making it smoother than low menthylester oils. The total menthol content of 52.5 percent was higher than all other oils except the Willamette, and was described as giving the Yakima oil a cool taste.

In general, U.S. oil is much sweeter in both odor and flavor than the oil produced in Brazil, the main U.S. competitor in foreign markets. The Brazilian oil is high in menthol which is usually extracted and sold separately. The menthol is more valuable than the cornmint oil. The cornmint oil that is left as a byproduct is extremely bitter and harsh in odor and flavor, in relation to the U.S. product, regardless of how much it is rectified. It must be blended with peppermint oil to be usable in any product demanding quality.

Brazil's exports of cornmint oil exceed U.S. exports of peppermint oil. However, the price of the U.S. product is roughly five times that of the Brazilian product, indicating the relative quality of the two oils. The Brazilian export price tends to be up when the U.S. price is down and vice versa, possibly indicating the partial substitutability of the two types of oils (Table 6).

Table 6.—U.S. peppermint oil and Brazilian cornmint oil: Comparison of exports, by quantity and average price, 1960–70

Year	U.S. peppermint oil		Brazil cornmint oil	
	Quantity	Average price	Quantity	Average price
	1,000 pounds	*Dollar per pound*	*1,000 pounds*	*Dollar per pound*
1960	1,004	4.62	791	1.33
1961	1,002	4.82	1,221	1.94
1962	1,185	4.81	1,834	1.41
1963	1,046	5.37	3,036	0.80
1964	1,350	5.29	2,121	0.84
1965	1,475	5.37	1,274	0.89
1966	1,384	5.91	1,736	1.64
1967	1,505	6.22	3,027	1.09
1968	1,878	5.88	2,875	1.04
1969	1,655	5.73	3,274	1.04
1970	1,951	5.31	[1] 2,665	[1] 1.38

[1] January–September only.

A process which increases the acceptability of U.S. peppermint oil is that of removing the menthofuran by rectification. This is done after the oil leaves the farm. Although it increases the cost of the oil, it improves the aroma.

The United States imports some cornmint oil and smaller quantities of peppermint oil (Tables 7 and 8). Cornmint oil imports have risen recently but amounted to only 9.0 percent of U.S. consumption in 1970 and 16.4 in 1971. It is difficult for cornmint oil to compete in the quality-conscious U.S. market. Its use is discouraged somewhat by the Food and Drug Administration which requires that labels show if cornmint is included in products containing mint oils.

Practically all cornmint oil imports in recent years have come from Brazil. Some may be reexported after being blended with U.S. oil. Labeling

requirements for cornmint oil do not apply to oil destined for use outside the United States. It is unlikely that this blending in the United States will increase in the future, because it tends to reduce the quality and price of the exported product.

Imports of peppermint oil are not expected to increase. Rather, they have decreased in recent years. The United States now has no rival in world markets for peppermint oil and the tariff is fairly high.

While there is no tariff on imports of cornmint oil, the tariff on peppermint oil is 12.5 percent (ad valorem). It was reduced to this level on January 1, 1972 as the final stage of the reductions granted by the United States in the Kennedy Round of trade negotiations under the General Agreement on Tariffs and Trade (GATT). Prior to January 1, 1968 the rate had been 25 percent.

Table 7.—Cornmint and peppermint oil: U.S. imports, by country of origin, averages 1957–61 and 1962–66, annual 1967–71 (derived from Mentha arvensis)

[In pounds]

Country of origin	Average		1967	1968	1969	1970	1971
	1957–61	1962–66					
Argentina	4,347	0	3,969	0	0	0	0
Brazil	30,567	261,881	316,707	250,391	328,000	317,000	223,395
France	317	1,058	9,259	0	0	0	5,160
Indonesia	13,770	459	0	0	0	0	0
Taiwan	8,234	160	0	800	2,000	2,000	0
Tanzania	0	1,920	30,240	0	0	0	0
Other	4,085	2,156	0	0	0	11,000	0
Total	61,320	267,634	360,175	251,191	330,000	330,000	228,555

Table 8.—Peppermint oil: U.S. imports, by country of origin, average 1963–65, annual 1966–71 (derived from Mentha piperita)

[In pounds]

Country of origin	Average 1963–65	1966	1967	1968	1969	1970	1971
United Kingdom	3,725	7,170	1,250	50	200	100	50
Italy	9,440	9,700	13,240	10,400	6,800	5,200	5,200
France	459	13,766	0	0	0	0	132
Argentina	0	0	0	0	0	0	10,304
Other	220	67	133	0	500	0	0
Total	13,844	30,703	14,623	10,450	7,500	5,300	15,686

Spearmint Oil

Domestic Production

During 1967–70, nearly 80 percent of reported[1] U.S. spearmint output was produced in Washington, mainly in the Yakima Valley region of south-central Washington. Indiana and Michigan accounted for the remainder (Table 9).

Spearmint oil yeilds are much higher in Washington than in the Midwest and other areas in more southern latitudes. Peppermint production also moved to new areas. High yields are obtainable when mint is grown under irrigation as it is in the Pacific Northwest. In Washington the long photoperiod plus the high sunshine intensity allow spearmint to grow fast enough so that two crops can be harvested in one year. Wilt disease hit the Valley in 1955 causing some peppermint acreage

[1] Production in Idaho and Wisconsin was not reported by USDA until 1971

to be shifted into less-susceptible spearmint and other crops.

Ample land is available for growing mint in the United States. Even though the huge irrigated area of the Columbia Basin, north and east of the old Yakima Valley region, had increased spearmint cultivation to over 2,000 acres by 1968, much more acreage is available there and elsewhere that could be devoted to spearmint or peppermint. The main limiting factor to growing mint in the United States in the longrun is that of finding adequate market outlets for the product.

Of the two major types of spearmint grown in the United States, Scotch spearmint (Mentha cardiaca) accounted for two-thirds of total acreage in 1968.[2] (This is the last year for which a breakdown by types of spearmint is available.) Native, or common, spearmint (Mentha spicata) generally is hardier and better able to withstand wilt and other diseases, insects, and bad weather, including frost and wind damage. On the other hand, Scotch spearmint yields more oil per acre.

Spearmint yielded an average of 73 pounds per acre in Washington in 1968, for which farmers received an average of $5.00 per pound. Therefore, the gross return for Washington spearmint oil averaged $365.00 per acre. This was considerably above gross returns for peppermint oil in Washington that year. On the average, however, gross returns for spearmint oil are more nearly equal to peppermint oil. Gross returns in Washington are as follows:

Year	Spearmint oil	Peppermint oil
	Dollars per acre	*Dollars per acre*
1962	177.10	282.20
1963	228.25	258.40
1964	245.00	248.40
1965	310.50	347.60
1966	418.00	339.45
1967	474.30	427.80
1968	365.00	277.20
1969	316.00	272.00
1970	365.00	281.20
1971	310.25	249.55

No average costs of production are available for spearmint oil but irrigation is known to account for a sizable share of the costs. Several types of irrigation are used. It is known that some of the larger farms are using overhead sprinkling and other types, which allow multiyear growing of spearmint. However, no statistics are available on the number of farms still using furrow irrigation and 1-year cropping for spearmint in the Yakima Valley.

Some saving can be expected on equipment and other costs when 2 crops of spearmint are obtained in 1 year. Spearmint also is less susceptible to wilt disease than peppermint. For these reasons, it is to be expected that per-acre costs are no greater for spearmint oil than for peppermint oil in the areas where both are grown. This is borne out in the Yakima Valley where the acreage devoted to each is about the same.

Spearmint oil prices always have fluctuated more than those of peppermint, but generally they have moved in the same direction during given intervals. Since spearmint is grown in a more limited area, climatic changes have a greater effect on overall quality of a particular year's crop, and this, in turn, affects prices. Also, farmers growing spearmint under a 1-year cropping system can enter or leave production rapidly. When the prices decline, total acreage usually is greatly decreased the following year, and price rises in any particular year are followed by increased plantings the next year.

Quality can be controlled by such factors as timing harvests, controlling weeds, and changing growing areas. Other cultural methods and handling and storage techniques also are important and require a high degree of sophistication by farmers.

Quality in mint oil presently is measured by three principal tests: taste, smell, and gas chromatographic analysis. Flavor and odor tests are highly subjective, but panels consisting of experienced taste and smell experts are very effective. Gas chromatography has become the accepted methodology for chemical analysis in the industry.

The carvone content in relation to the specific gravity of spearmint oil is important in determining quality. When the carvone content is low in relation to the specific gravity, the flavor and odor are harsh. The minimum standards for spearmint oil in the United States as specified in the Food Chemicals Codex (National Academy of Sciences, Washington, D. C.) are: Carvone, not less than 55 percent; and specific gravity, 0.917 to 0.934.

[2] Source: *American Essence*, by James E. Landing. Kalamazoo Public Museum, 315 S. Rose St., Kalamazoo, Michigan, 1969.

Table 9.—Spearmint oil: Production, by States, averages 1957–61 and 1962–66, annual 1967–71 [1]

[In thousands of pounds]

State	Average		1967	1968	1969	1970	1971
	1957–61	1962–66					
Indiana	184	112	115	166	205	329	280
Michigan	120	71	85	93	160	198	150
Washington	596	605	1,432	1,124	1,363	1,267	1,063
Total	900	788	1,632	1,383	1,728	1,794	1,493

[1] Does not include Idaho and Wisconsin which totaled 297,000 pounds in 1971.

Table 10.—Spearmint oil: Average prices received by farmers, by producing States, average 1957–61 and 1962-66, annual 1967–71

[In dollars per pound]

State	Average		1967	1968	1969	1970	1971
	1957–61	1962–66					
Indiana	4.69	5.27	8.00	8.30	8.10	5.50	4.50
Michigan	4.55	5.45	8.80	8.70	8.60	5.40	4.60
Washington	3.41	3.71	5.10	5.00	4.10	4.30	3.65
United States	3.85	4.06	5.50	5.64	4.99	4.64	3.90

U.S. spearmint oil production generally has trended upward. Output averaged 82 percent higher during 1968–70 than during 1957–61. Most of this gain was in Washington where planted acreages have increased rapidly. Midwestern output, meanwhile, decreased after 1957–61 and only recently recovered to this level. Falling prices in recent years were followed in 1971 by decreased planted acreage together with lower yields in the Midwest resulting in reduced output (Tables 9 and 10).

Spearmint oil is processed on the farm in practically the same manner as peppermint oil. It is said that spearmint oil improves with age until it becomes 1 year old when its flavor and odor is at its finest and most characteristic.

Internal Consumption

Consumption of spearmint oil in the United States has risen rapidly in recent years (Table 11). Availabilities for consumption (not including stock changes) increased from an average of 610,000 pounds during 1957–61 to 957,000 during 1966–70, a gain of 57 percent. Per capita intake also increased during the same period. In 1957–61 about 66.4 percent of U.S. production was being consumed at home. By 1966–70, the percent going into domestic consumption had decreased to 63.1 percent. In 1971, this percent was still lower.

Practically all estimated domestic use is for toothpaste and chewing gum. More is used for toothpaste (including mouthwash) than for chewing gum as contrasted to peppermint oil where the reverse is true. Estimated domestic usage for spearmint oil is as follows:

Use	*Percent*
Toothpaste and mouthwash	50
Chewing gum	47
Confectionery	1
Other uses	2
Total domestic use	100

Although spearmint oil and peppermint oil have totally different flavors, they are partially substitutable since they have similar uses. Since toothpaste sales rose by 34 percent from 1963 to 1967 and chewing gum sales increased by 31 percent during the same period, the derived demand

for the two mint oils has expanded rapidly. U.S. sales of toothpaste and chewing gum are expected to continue to grow.

Carvone can be made synthetically and could be substituted for spearmint oil. Usually its price is lower than that of spearmint oil, but its quality does not equal the natural product. Therefore, it has not effectively replaced spearmint oil in any great amount in the United States.

U.S. spearmint oil has no major world competitor and no other spearmint oil is used in the U.S. market. There are no special labeling requirements for spearmint oil within the United States, as there are for peppermint oil.

Foreign Trade

U.S. exports of spearmint oil are smaller than those of peppermint oil. However, the United States is by far the world's most important exporter. In 1971, spearmint oil exports amounted to 848,000 pounds, valued at $4.8 million. During 1967–69, U.S. exports averaged 574,000 pounds, compared with 309,000 during 1957–61 and 475,000 during 1962–66. Exports amounted to 33.6 percent of production during 1957–61. In 1966–69, the share of the crop exported was 36.3 percent. Just under one-half (48.9 percent) of total U.S. exports went to Europe in 1967–69. Japan took another 21.2 percent during the same period. Canada and Mexico were the next largest markets, while the African countries, Brazil, and Australia also were sizable markets (Table 13).

In Europe, the United Kingdom is the largest single market, followed by France, West Germany, Italy, and the Netherlands. Japan was the largest single market in 1969 and 1970 and shows the most rapid growth.

By regions, the market growth is as follows:

Country	Change, 1962–66 avcrage to 1971
	Percent
Europe	+ 99.6
North America	+ 73.2
South America	+ 14.8
Asia/Oceania	+ 61.1
Africa	+147.6
Total exports	+ 78.5

The above shows that U.S. exports of spearmint oil to Europe have increased slightly more than total U.S. exports of spearmint oil. Exports to Europe are expected to continue to increase as population and incomes rise.

Both Scotch and Native spearmint oils are exported. As Scotch spearmint oil is cheaper, available in larger quantities, and has a more mellow flavor than Native spearmint oil, a greater amount is exported. However, Native spearmint oil has more strength and is in demand for blending with Scotch oil, particularly for chewing gum.

Table 11.—Spearmint oil: Quantity available for consumption, United States, 1957–71

Year	Production	Exports	Available for consumption [1]
	1,000 pounds	*Pounds*	*Pounds*
1957	562	213,659	348,341
1958	511	274,164	236,836
1959	824	254,324	569,676
1960	1,110	407,366	702,634
1961	1,588	394,205	1,193,795
1962	1,123	446,069	676,931
1963	707	409,685	297,315
1964	489	512,249	−23,249
1965	570	554,732	15,268
1966	1,050	451,412	598,588
1967	1,632	479,626	1,152,374
1968	1,383	588,664	794,336
1969	1,728	652,458	1,075,542
1970	1,794	631,885	1,162,115
1971	1,493	848,118	644,882

[1] Indicates the amount of spearmint oil available for domestic consumption from the current crop. Stock data is unavailable.

A leading U.S. exporting firm listed its spearmint as follows in a recent year, placing it well within Codex requirements:

Item	Yakima Native	Yakima Scotch
Carvone (Percent) . . .	66.5	62.5
Specific Gravity (at 20° C)	0.9290	0.9260
Specific Gravity (at 25° C)	0.9260	0.9220

In addition, the exporting firm showed its Scotch spearmint as having a high limonene content and its Native spearmint as having a relatively low one.

Imports of spearmint oil are negligible, since the United States is an efficient producer and output in other countries is limited. The U.S. tariff duty on spearmint oil imports is 3 percent and there are no nontariff barriers to entry into the United States. Spearmint oil is not subjected to any special laws for use within the United States.

Marketing Channels

The harvesting of the new mint crops in the United States begins with spearmint in Washington in July and continues for 2 months depending on the area and the number of cuttings. The peppermint and spearmint oils are distilled on farms for sale to private dealers, or for storage and later sale. Mint oil does not deteriorate rapidly when properly stored, but most oil is sold immediately unless the market is weak and dealers have not contracted for it. The oil is stored in 225– or 400-pound drums.

Dealers take possession of oil either on farms or at nearby receiving stations. Growers usually are paid as soon as the oil is received by the dealer. Each major dealer has his own processing plant or plants. One of the four largest firms has its processing plant in Washington. The rest have their main plants in the Midwest.

Samples usually are drawn from each drum as it arrives at the collection point and is weighed. Initial appraisal is made of the sample and it is then sent on to the dealer's laboratory for further testing. The odor is checked and gas chromatography is applied. The computer is being used increasingly to match oils to customers' needs.

Customers' needs ultimately are dependent on the type of oil required in the end product. Each customer has different requirements, but wants consistent quality in ample supply from year to year. Thus, dealers provide an important function in getting the oil from farmers to end users.

Generally, Washington peppermint and spearmint oils are used for the export market because of their unique qualities and low prices. Sometimes, however, oils from other areas—particularly peppermint oil—are blended with Washington oils, or enter the export market separately when desired by overseas customers.

In general, oils are classified by quality by the dealers when received from farms. The highest quality oils are usually set aside for the U.S. chewing gum trade which prefers oil in its natural form. The other oils usually are blended. Some of these blends are first redistilled or rectified, depending on customers' specifications. The tail fractions or even middle fractions are removed by a fractionating column in dealers' processing plants. The shrinkage can be as high as 30 percent, resulting in a considerable disparity in prices quoted by the trade. Dealers perform numerous functions for farmers including conducting research, providing service, and even giving credit.

After processing, the U.S. mint oils move to either domestic users or export customers. U.S.-made chewing gum, toothpaste, and other products containing mint oil also are exported, but not in any quantity to Europe. The European coun-

Table 12.—Chewing gum and toothpaste: U.S. exports by country of destination, 1970
[In thousand dollars]

Country of destination	Chewing gum	Toothpaste and other dentrifrices
Austria	28	..
Belgium	40	..
Denmark	..	18
Finland	..	25
France	..	30
Greece	..	33
Italy	36	55
Netherlands	..	51
Switzerland	355	54
United Kingdom	..	17
West Germany	92	..
Total Europe	551	283
Total world	4,901	2,337

tries, by and large, have their own factories to manufacture end products that use U.S. mint oil (Table 12).

Some domestic users supply their overseas subsidiaries directly with their own oil. No statistics are available on the proportion of U.S. exports that moves in this manner, since U.S. Customs is not required to keep a record of exports by firms. However, the quantity is believed to be sizable, since U.S. subsidiaries provide a large part of overseas chewing gum and toothpaste sales.

Most of the rest of the oil is exported by U.S. dealers to overseas customers, usually through an import agent. Not more than 2 percent of U.S. mint oil destined for export is shipped by farmers directly to foreign importers.

Table 13.—Spearmint oil: U.S. exports, by country of destination, average 1962–66, annual 1967–71

[In pounds]

Country	Average 1962–66	1967	1968	1969	1970	1971
Netherlands	11,136	10,846	13,242	16,424	15,103	12,560
Belgium	2,566	....	2,095	....	5,199	720
France	46,110	42,156	72,071	110,514	78,431	178,314
West Germany	19,441	22,426	18,362	39,169	46,504	46,238
Italy	12,682	38,930	52,709	24,232	22,063	43,991
Total EC	91,935	114,358	158,479	190,339	167,300	281,823
United Kingdom	140,192	82,436	138,133	124,367	115,067	184,000
Sweden	1,438	1,934	1,700	2,540	....	2,475
Switzerland	3,127	....	2,529	5,082	5,498	2,930
Other	3,909	5,195	9,308	6,329	4,299	9,824
Total Europe	240,601	203,923	310,149	328,657	292,164	481,052
Canada	30,584	45,167	47,366	42,077	43,909	40,623
Mexico	24,558	43,616	34,408	46,161	79,993	54,643
Guatemala	350	....	1,902	....	....	184
Other	743	....	....	2,008	....	1,445
Total North America	56,235	88,783	83,676	90,246	123,902	96,895
Colombia	1,231	....	2,143	3,656	....	5,734
Brazil	21,141	12,547	30,639	5,178	10,985	15,600
Peru	3,715	4,397	1,863	3,944	5,347	6,294
Other	2,244	....	....	5,516	2,461	4,921
Total South America	28,331	16,944	34,645	18,294	18,793	32,549
India	7,316	5,862	....	....	....	1,200
Israel	8,560	3,280	....	6,336	3,546	2,806
Japan	65,521	105,003	98,953	160,698	123,661	160,258
Australia	30,673	15,805	26,657	13,780	26,143	27,445
Other	23,027	7,841	16,533	11,449	19,188	25,922
Total Asia/Oceania	135,097	137,791	142,143	192,263	172,538	217,631
Morocco	80	....	....	3,014	5,660	8,920
Republic of South Africa	6,240	4,714	7,224	5,230	3,204	6,671
Total Africa	6,320	4,714	7,224	8,244	8,864	15,591
Other countries	8,235	27,471	10,827	14,754	15,624	4,400
Total exports	474,819	479,626	588,664	652,458	631,885	848,118

The European Market

Europe is an old and reliable outlet for one-half of U.S. mint oil exports and can be expected to become an even larger market in the future. The United Kingdom is the largest single European buyer, followed by France, West Germany, the Netherlands, Italy, and Switzerland.

The preliminary price elasticities have been computed for U.S. mint oil exports to Europe. The elasticity for peppermint oil is estimated at minus 1.30, meaning this oil is fairly elastic and apparently substitutes can be used. U.S. spearmint oil elasticity was found to be near zero. Spearmint oil, therefore, is inelastic and probably has few substitutes.

This indicates that when the price of U.S. spearmint oil changes in the European market, the quantity purchased will remain about the same unless other factors interfere. On the other hand, if the price of peppermint changes by a certain percent, the quantity purchased will change by a slightly larger percent.

Put another way, if the price of U.S. peppermint oil gets too high, the European market will use substitutes. However, European users apparently have a standard formula for spearmint oil and have no substitutes for it.

The European Community (EC) countries—Belgium, France, West Germany, Italy, Luxembourg, and the Netherlands—have a Common External Tariff (CXT) on rectified mint oil of 6.4 percent (ad valorem). Unrectified oil is free. In addition, there is an 11-percent turnover (value-added) tax on all mint oils. These are the only major EC trade barriers. Tariffs in selected European markets are as follows:

Country	Tariff	
	Unrectified oil	Rectified oil
EC (European Community)	Free	6.4 percent ad valorem
United Kingdom	Free	8.0 percent ad valorem
Sweden	Free	Free
Switzerland	18 Swiss francs per 100 gross kilos	18 Swiss francs per 100 gross kilos

U.S. mint oils are exported to a number of other European countries in relatively small quantities. These exports are growing and should continue to do so.

The United Kingdom

Until recently, the United Kingdom, the largest single market for U.S. mint oil in Europe, also was the largest market in the world, but it has now been equaled by Japan. Britain's slowly-growing population totaled about 56 million in 1970. Gross National Product was around $110 billion in the same year. The U.K. market for U.S. mint oils has gradually expanded and it remains a reliable outlet.

Peppermint Oil

The United Kingdom has a long history of growing and using peppermint oil. Sizable quantities, at one time, were produced in England, but high costs have reduced the growing area to an estimated 60 to 80 acres annually. Yields generally are too low for profitable production, although the quality of the oil is good. English Mitcham peppermint oil draws a premium price whenever it is available.

The demand for peppermint oil continues to grow in the United Kingdom. At present, domestic consumption including cornmint totals about 750,000 pounds annually. This amount does not take account of exports, since mint oils are not shown separately in official U.K. export statistics. The exact quantity of mint oil exported as an ingredient of other products also is not known.

Peppermint oil has many uses in the United Kingdom. As in most countries, however, toothpaste and chewing gum are the main ones. Manufacturers' sales of toothpaste (including toothpowder and liquid preparations) have increased as follows:

Year	*1,000 British pounds*	Equivalent *1,000 U.S. dollars*
1967	12,766	30,638
1968	13,400	32,160
1969	13,410	32,184
1970	14,100	33,840

Production of chewing gum also has been generally rising as follows:

Year	Production *Million pounds*
1966	31.7
1967	34.0
1968	37.8
1969	36.9

Other flavoring uses include confectionery, pharmaceuticals, and food products. Because of the wide variety of uses, many types of oils are demanded. In general, however, a lower quality of oil is used in the United Kingdom than in the United States. Cornmint is blended freely with U.S. oil and high-quality European oils are mixed in an effort to improve blends. Subsidiaries of U.S. companies tend to use only U.S. oils that have been processed and blended in the United States.

Preliminary estimates place the price elasticity of demand for U.S. peppermint oil in the United Kingdom at near minus 1. Thus, if the price of U.S. peppermint oil drops 1 percent, an increase of 1 percent in the amount exported to the United Kingdom could be expected.

Importers, however, indicate that there is only a moderate amount of substitution in the U.K. market for U.S. peppermint oil. Spearmint and other flavors are only partially substitutable. The market depends mostly on the amount of oil that is needed. Also it is fairly difficult to change tastes in products such as chewing gum and toothpaste. Therefore, the total value of U.S. peppermint oil exports probably will stay the same no matter what the price. West European oils are higher

Table 14.—Peppermint oil: U.K. imports, by region and country of origin, 1966–70

[In pounds]

Country	1966	1967	1968	1969	1970
North America:					
Canada	....	....	....	575	....
United States	338,807	328,085	512,405	439,793	305,003
Total North America	338,807	328,085	512,405	440,368	305,003
South America:					
Brazil	223,057	296,060	347,224	232,588	295,342
Other	....	....	....	632	4,947
Total South America	223,057	296,060	347,224	233,220	300,289
Western Europe:					
France	38,785	37,669	34,964	57,214	12,642
Germany, West	....	....	....	3,523	1,059
Italy	20,610	13,965	17,325	8,295	6,659
Other	....			5,733	3,969
Total Western Europe	59,395	51,634	52,289	74,765	24,329
Eastern Europe:					
Bulgaria	....	22,421	21,899	11,023	6,614
Hungary	....	....	....	1,213	220
Total Eastern Europe		22,421	21,899	12,236	6,834
Asia:					
People's Republic of China	144,780	....	91,580	94,620	19,760
Other countries	43,508	116,536	21,263	5,915	329
Grand total	809,547	814,736	1,046,660	861,124	656,544

After mowing, mint is left in the field to partially dry before being moved to the distillery where the peppermint and spearmint oil is extracted.

Placing raw mint in vat at distillery.

Drawing mint oil after distilling.

Preparing the chewing gum base for mint flavoring. The chewing gum industry is one of the three largest consumers of U.S. mint oil.

priced, East European oils are not much used, Chinese oils are somewhat unreliable, and Brazilian oils are considered to have much lower quality.

There are no major internal regulations that prohibit the free movement of mint oil in the United Kingdom. Several large firms are able to recify and blend the various oils themselves. Most firms prefer a consistent, dependable product. Several users complained that U.S. oils vary from year to year and Washington oils, in particular, may have a high weed content.

Mint oil export statistics are not available. Data on toothpaste and chewing gum exports follow:

Commodity and year	Quantity	Value
	1,000 pounds	*1,000 dollars*
Dentifrices and mouthwash:		
1969	7,325	5,009
1970	7,326	5,422
Chewing gum:		
1969	9,691	4,471
1970	10,519	4,769

It is not known how much mint oil is contained in these and other products that are exported, but the amount is fairly sizable. Toothpaste and chewing gum are widely exported by the United Kingdom, particularly to Europe and Africa.

The United Kingdom increased imports of peppermint oil between 1966 and 1968, but encountered currency problems after devaluation of the British pound in late 1967. Imports of peppermint oil were at the lowest level of the last 5 years in 1970 when 657,000 pounds valued at $2.3 million were imported (Table 14). The major source was the United States, followed by Brazil. There were no other major sources in 1970, although Mainland China has been important in a few scattered years. Very little of the Brazilian and Chinese oil is peppermint (piperita) is produced in the United States. The United States furnished 90 percent of U.K. imports of this type of oil in 1970 and, therefore, can be said to have limited competiton at this level of quality.

A look at the prices of imported peppermint oils also will verify that competition for U.S. oil is limited. The following are average prices of imports of peppermint oil:

No special transportation problems are indicated by U.K. importers. Shipments usually are received in drums. Marketing channels include U.S. manufacturer to subsidiary, U.S. exporter to importer, or import agent and on to user, or U.S. exporter to end user. Importers indicate that they tend to buy in advance when the crop looks short. When the crop is good the tendency is to wait until the harvest. Variations in U.S. quality from year to year are mentioned repeatedly by importers. The need for credit is another special problem for British importers. There is no U.K. tariff on unrectified mint oil. Rectified oil, however, carries an 8 percent ad valorem duty. The United Kingdom has no other import restrictions on mint oil.

Table 15.—Peppermint oil: Average prices of U.K. imports, by country of origin, 1966–70

[In dollars per pound]

Country	1966	1967	1968	1969	1970
Italy	11.48	8.79	8.01	9.32	11.00
Bulgaria	—	6.60	6.58	7.08	7.47
United States	3.39	3.28	5.97	5.42	5.15
France	2.53	3.97	5.04	4.72	3.61
People's Republic of China	1.69	—	1.23	1.15	1.86
Brazil	1.82	1.12	1.15	1.16	1.67

Spearmint Oil

No spearmint is grown in the United Kingdom for oil. The entire supply comes from imports. Relatively small amounts of spearmint oil, compared with peppermint oil, are used in the United Kingdom. Since spearmint oil was not shown separately in import statistics until 1970, demand trends are difficult to ascertain. The preliminary elasticity for U.S. spearmint oil in the United Kingdom is —0.25, making it fairly inelastic.

The United Kingdom imported 46,000 pounds of spearmint in 1970. A breakdown by source follows:

Country of origin	Quantity	Value	Unit value
	Pounds	*U.S. dollars*	*U.S. cents per pound*
United States	44,593	245,153	5.50
France	1,105	4,920	4.45
Netherlands	525	3,979	7.58
Total	46,223	254,052	5.50

Although no spearmint was imported from Mainland China in 1970, imports have been obtained from that source in the past.

The marketing of spearmint oil in the United Kingdom is similar to that of peppermint oil. The import tariff is the same for both oils.

France

France is, by far, the largest market for U.S. mint oils in the EC and is second only to the United Kingdom in Europe. Population now is over 50 million and per capita income was $1,963 in 1969. France has long had an important flavor and fragrance industry. The country not only produces some mint oil, but exports sizable quantities. U.S. exports to France generally have been increasing over the years.

Peppermint Oil

Official production statistics are unavailable. According to trade sources, however, output has decreased from an average of 165,000 pounds during 1966–67 to 145,000 during 1969–70. France has an extensive perfume industry centered in the south. Several firms in Paris and elsewhere are equipped to do their own processing and blending of mint oils.

Based on estimated output and official trade data, apparent domestic consumption of mint oil increased from an average of 768,000 pounds during 1966–67 to an average of 1.08 million pounds in 1969–70. These figures include spearmint oil trade, but take no account of trade in products in which peppermint oil is an ingredient. For example, in 1969 exports of dentifrices amounted to 2.1 million pounds and chewing gum to 10.2 million. During the same year, imports of dentrifrices were 1.6 million pounds and imports of chewing gum were 3.6 million.

No statistics are available regarding the utilization of mint oil in France. However, it is known that the production of toothpaste and chewing gum were:

Year	Toothpaste	Chewing gum
	Mil. lb.	*Mil. lb.*
1964	22.3	10.4
1965	19.0	11.0
1966	19.6	11.9
1967	24.0	12.6
1968	26.2	14.1

In addition to tooth paste and chewing gum, a wide variety of other products are flavored with peppermint oil including beverages, pharmaceuticals, food products, and candies. France is a great essential oil-blending country. Therefore, many types of mint oil are imported from all over the world. Some of the blends are quite complex and many different oils may be used in a particular blend to suit a customer's needs.

The demand for U.S. peppermint oil in France is fairly elastic. Preliminary estimates place the elasticity at minus 1.56. This means that a 1 percent drop in price could result in a 1.56 percent increase in exports. The total value of U.S. exports of peppermint oil can be expected to increase when there is a drop in price of U.S. peppermint oil. Conversely, when the price goes up, total value can be expected to go down.

France exports some mint oil, but trade data is not broken down by peppermint and spearmint oil. Mint oil exports increased from 1966 to 1968 and then decreased in 1969 (Table 16). Exports in 1969 averaged $3.73 per pound and were valued at $2.3 million. The major destinations traditionally are Spain, the Netherlands, the United Kingdom, Italy, West Germany, South Vietnam, and Japan.

France's imports of mint oil generally have been rising, reaching 1.8 million pounds, valued at $5.5 million in 1970 (Table 17). The major sources during 1970 were:

Source	Amount
	1,000 dollars
United States	2,440
Brazil	1,228
Morocco	466
Mainland China	378
Bulgaria	300
Spain	271
USSR	193

The U.S. share of France's mint oil imports dropped to 44 percent in 1970 from 48 percent in 1969, mainly as a result of higher prices paid for U.S. oil. Brazil, meanwhile, increased its share of the market from 17.5 percent in 1969 to 22.2 percent in 1970. Morocco, Spain, and the USSR also increased their shares during the same period.

Most importers indicate low price and consistency in quality as important factors in peppermint oil imports. Usually, users also express a prefer-

ence for stable prices from year to year. A few complain about transportation costs. However, transportation costs are only a small part of total costs. No particular preference for type of container was indicated. In general, it can be said that the French industry is highly flexible and adjusts rapidly to changing peppermint oil conditions.

Spearmint Oil

There is no known production of spearmint oil in France. Separate data on spearmint oil trade are not available. Rough estimates placed spearmint oil imports at one-sixth of the value of total

Table 16.—Mint oil: French exports, by country of destination, 1966–69

[In pounds]

Country	1966	1967	1968	1969
North America:				
United States	17,637	11,023	....	....
Other	8,818	....	....	....
Total North America	26,455	11,023	....	....
South America:				
Brazil	....	2,205	8,818	....
Chile	4,409	4,409	4,409	....
Total South America	4,409	6,614	13,227	....
Western Europe:				
Belgium-Luxembourg	4,409	....	2,205	....
West Germany	26,455	39,683	52,910	57,320
Italy	83,775	77,161	74,956	77,161
Netherlands	11,023	24,251	46,297	39,683
Spain	17,637	39,683	79,366	33,069
Switzerland	26,455	15,432	24,251	....
United Kingdom	41,887	44,092	55,115	57,320
Other	15,432	22,046	17,637	....
Total Western Europe	227,073	262,348	352,737	264,553
Eastern Europe:				
Bulgaria	2,205	6,614	24,251	26,455
Czechoslovakia	6,614	6,614	....	....
East Germany	....	13,227	35,274	....
Hungary	8,818	....	....	....
Poland	15,432	17,637	....	....
Total Eastern Europe	33,069	44,092	59,525	26,455
Asia and Oceania:				
India	11,023	24,251	17,637	....
Japan	74,956	70,547	46,297	81,570
South Vietnam	39,683	44,092	110,230	46,297
Other	22,046	2,205	50,706	....
Total Asia and Oceania	147,708	141,095	224,870	127,867
Africa	15,432	6,614	15,432	....
Other countries	19,843	33,067	28,658	187,390
Grand total	473,989	504,853	694,449	606,265

mint oil imports in 1968.

The demand for U.S. spearmint oil in France is quite inelastic. Preliminary estimates place it near zero. This means that France will import the same amount of U.S. spearmint oil even when prices change considerably.

Unsteady supply was indicated by importers as a major problem in importing spearmint oil. Importers also felt that spearmint oil prices could reach a limit beyond which other oils, and synthetics would be substituted.

West Germany

West Germany is the third largest market for U.S. mint oil in Europe. It has decreased as a market for U.S. peppermint oil in recent years, but has become a larger market for U.S. spearmint oil. West Germany has a strong, viable economy. The population totals about 60 million. Gross National Product was around $185 billion in 1970 and is growing steadily. West Germany should continue to be a good overseas outlet for U.S. mint oil.

Peppermint Oil

Production of mint oils is negligible in West Germany, although mint was grown there years ago. Because of high production costs it is unlikely that West Germany will grow significant amounts of mint oil in the foreseeable future.

The demand for peppermint oil increased from an average of 465,000 pounds in 1966–67 to 555,000 in 1968–69, an increase of 14 percent.

Table 17.—Mint oil: French imports, by country of origin, 1966–70

[In pounds]

Country	1966	1967	1968	1969	1970
North America:					
United States	249,120	277,780	337,304	337,304	454,148
South America:					
Brazil	257,939	557,764	493,830	599,651	736,336
Western Europe:					
Italy	2,205	6,614	11,023	....	....
Spain	28,860	59,524	26,455	24,251	52,910
United Kingdom	4,409	2,205	4,409	....	....
Total Western Europe	35,474	68,343	41,887	24,251	52,910
Eastern Europe:					
Bulgaria	35,274	50,706	50,706	48,501	39,683
Hungary	6,614	4,409	6,614	....	....
USSR	123,458	114,639	37,478	19,841	30,864
Yugoslavia	2,205	....	....	....	....
Total Eastern Europe	167,551	169,754	94,798	68,342	70,547
Asia:					
People's Republic of China	79,366	97,002	123,458	147,708	119,048
Republic of China, Taiwan	72,752	92,593	116,844	....	....
Total Asia	152,118	189,595	240,302	147,708	119,048
Africa:					
Morocco	22,046	....	....	59,524	315,258
Other countries	4,206	33,069	17,637	52,911	39,684
Grand total	888,454	1,296,305	1,225,758	1,289,691	1,787,931

Toothpaste and chewing gum production generally have been rising as the following data shows:

Year	Toothpaste	Chewing gum
	[In million pounds]	
1966	28.8	13.5
1967	29.7	13.7
1968	32.6	12.8
1969	36.2	15.3
1970 [1]	33.1	16.8

[1] Estimated

The major internal regulation is the 11 percent value added tax in effect in the EC. This tax is applied at each step of the marketing process whenever value is added beginning when imported mint oil reaches the dock.

West German exports of peppermint oil decreased from an average of 97,000 pounds in 1966–67 to 86,000 in 1968–69, and 77,000 in 1970. The leading markets in 1970 were India, Finland, Austria, and Peru (Table 18).

West Germany's purchases of peppermint oil increased between 1966 and 1968, but since have declined slightly (Table 19). Brazil is the main source on a quantity-basis, while the United States leads in value. These two countries dominate the market, followed by Mainland China, Switzerland, the United Kingdom, and Japan.

Prices of U.S. oil are determined by the size

Table 18.—Peppermint oil: West German exports, by country of destination, 1966–70

[In pounds]

Country	1966	1967	1968	1969	1970
North America:					
Mexico	4,409	....	....	....	....
South America:					
Chile	1,984	....	....	....	....
Peru	5,512	9,480	7,055	9,039	9,480
Total South America	7,496	9,480	7,055	9,039	9,480
Western Europe:					
Austria	....	....	....	5,952	10,362
Denmark	2,866	3,968	3,527	....	....
Finland	5,512	3,968	5,071	6,173	11,905
France	1,984	....	1,543	....	....
Netherlands	2,646	....	....	....	....
Sweden	1,764	....	2,646	2,866	....
Switzerland	1,764	10,582	2,646	2,425	4,189
United Kingdom	3,748	....	....	....	....
Total Western Europe	20,284	18,518	15,433	17,416	26,456
Eastern Europe:					
East Germany	....	13,448	7,496	....	....
Asia and Oceania:					
India	....	85,979	42,769	40,785	12,566
Other	5,071	....	3,968	....	....
Total Asia and Oceania	5,071	85,979	46,737	40,785	12,566
Africa:					
Nigeria	661	....	441	1,102	2,205
Other countries	5,730	23,590	11,683	13,890	26,675
Grand total	43,651	151,015	88,845	82,232	77,382

and quality of the U.S. crop in relation to the size and quality of competitive crops. Some importers feel it is best to buy early to assure an adequate supply. They generally buy initially by sample and then expect a fixed standard on future purchases. Taste and chemical analysis usually are used to determine whether the oil meets the fixed standard.

Peppermint oil in West Germany is used roughly for: dentifrices, 70 percent; chewing gum, 20; and other, 10.

An estimated 100,000 pounds of peppermint oil was used to flavor chewing gum in West Germany in 1970. The quantity going into toothpaste was considerably larger, while a lesser quantity was used in other products.

Most West German importers and users do their own blending and want the U.S. product to be pure, containing no cornmint oil. However, small quantities of cornmint are difficult to detect when blended with the U.S. peppermint oil.

One chewing gum manufacturer listed his U.S. requirments as follows: the oil must be Midwest; it must be twice rectified; and it must be of consistent quality, "U.S.P.[3] oil of peppermint, Midwest." This manufacturer indicated that U.S. oil was mixed with arvensis oil from Taiwan to give it a stronger taste. The same source also indicated that 0.6 percent of the total finished product, by quantity, consisted of mint oil while 20 percent of the total cost of the ingredients was the cost of the mint oil. German toothpaste manufacturers tend to use lower-priced U.S. oil from the West blended with large amounts of arvensis oil. All users interviewed rely on taste tests first and chemical analyses second in determining quality.

The prices of U.S. and competing oils vary greatly as can be seen in Table 21.

The oils from different countries are of varying qualities. In addition to blending the natural oils together, importers indicate semisynthetic oil is sometimes added to the blend. This semisynthetic oil may include menthol, esters, and artificial flavors. Importers say no new uses are anticipated but do not rule them out. It is believed that research to find new uses would be difficult.

Although a variety of containers is used in overseas trade, 200-pound drums are the most popular. Oil can move three ways; through importers to various end users, directly from exports to end user, or from parent companies in the United States to their subsidiaries. Importers usually buy through advance contract and end users through orders from importers. Importers want: (1) accurate information from exporters, (2) assured supplies, (3) steady prices, and (4) pure products. West German importers see no way to promote U.S. oils except to follow these points. A special problem with U.S. oil reportedly is dock strikes that interrupt supply.

Spearmint Oil

No official statistics are available on growing spearmint in West Germany, but production is believed to be negligible. German data on exports and imports of spearmint are not shown separately. U.S. exports of spearmint oil to West Germany have increased from an average of 19,400 pounds in 1962–66 to 46,200 in 1971. In general, the marketing situation is the same as for peppermint oil except that synthetics are used more in the blending process. The percentage of spearmint oil going into dentrifrices is slightly smaller than that of peppermint oil, probably about 65 percent of total spearmint usage.

The Netherlands

The Netherlands is a moderate-sized, but steady, market for U.S. mint oils. This is a small and, highly-developed nation. The population is about 13 million and per capita income was some $1,799 in 1969. Since production of mint oil is negligible in the Netherlands, and stock data are unavailable, consumption corresponds to imports minus exports. About 30 percent of total mint oil imports are reexported by the Dutch. U.S. exports of mint oil to the Netherlands have increased gradually with small year-to-year fluctuations.

Peppermint Oil

Although precise data on usage are not available, rough estimates indicate that the chewing gum and toothpaste industries rank as the primary users of mint oil in the Netherlands at the present time, followed by confectionery and liqueurs. Total apparent consumption of peppermint oil averaged 163,000 pounds during 1969–70 compared with 115,000 during 1966–67. The natural

[3] United States Pharmacopeia.

oils usually come from the United States. Part of the U.S. oil and almost all of the oil from other countries are blended. Yakima is the U.S. oil most commonly purchased by Dutch users because of its price, but Midwwest and other U.S. oils also are bought. Some users indicate that U.S. oil is stored too long; they would like fresher oil. Importers also state a preference for oil in galvanized steel drums of 200 kilos or 400 pounds.

The Netherlands is strongly dependent on trade and reexports mint oil whenever possible. About one-half of peppermint oil exports go to India and South Vietnam, in about equal amounts. The rest was exported in much smaller quantities to a number of other countries. Exports totaled 77,000 pounds in 1969 valued at $333,000 and 60,000 pounds in 1970 valued at $171,000. This suggests that little U.S. oil is reexported, but rather is consumed within the Netherlands.

Imports of peppermint oil averaged 232,000 pounds, valued at $690,000 during 1969–70. This was an increase of 46 percent in quantity imported and 9 percent in the value of imports from 1966–67 to 1969–70. The major sources in 1970 were the United States, the United Kingdom, Brazil, and France (Table 20).

The United States and France are the only major suppliers of high-quality peppermint oil. The other important countries apparently are supplying mostly cornmint oil to the Netherlands market.

Spearmint Oil

The Netherlands does not report spearmint oil trade separately. Therefore, it is difficult to discuss

Table 19.—Peppermint oil: West German imports, by country of origin, 1966–70

[In pounds]

Country	1966	1967	1968	1969	1970
North America:					
United States	151,676	119,489	139,772	144,181	174,384
South America:					
Brazil	134,481	382,278	350,752	288,141	278,661
Western Europe:					
France	21,605	27,117	34,392	20,503	16,094
Netherlands	1,984	3,527	5,732	....	1,984
Switzerland	12,125	17,857	33,951	47,840	28,660
United Kingdom	11,023	13,228	14,330	16,755	24,692
Total Western Europe	46,737	61,729	88,405	85,098	71,430
Eastern Europe:					
Bulgaria	10,803	9,480	2,646	4,189	8,598
Hungary	2,205	....	1,102	....	2,205
Poland	2,205	1,102			....
USSR	2,205	....			....
Total Eastern Europe	17,418	10,582	3,748	4,189	10,803
Asia:					
People's Republic of China	91,270	42,328	42,769	62,611	38,800
Japan	17,857	17,196	18,078	22,487	18,739
Republic of China, Taiwan	12,346	13,889	13,448	15,653	8,377
Total Asia	121,473	73,413	74,295	100,751	65,916
Other countries	440	3,527	881	1,762	882
Grand total	472,225	651,018	657,853	624,122	602,076

the spearmint market situation with any precision. However, in most European markets, the only important overseas supplier is the United States, with small quantities coming from Peoples Republic of China and other European countries (probably all reexports).

Insofar as is known, most imported spearmint oil is used in chewing gum or toothpaste. The United States exported the following amounts to the Netherlands:

Year	Quantity
Average:	*pounds*
1962-66	11,136
Annual:	
1967	10,846
1968	13,242
1969	16,424
1970	15,103
1971	12,560

Although synthetic oil is available at competitive prices, natural oil is preferred.

Table 20.—Peppermint oil: Netherlands imports, by country of origin, average 1966–67, annual 1969 and 1970

Country	Average 1966–67	1969	1970	
			Quantity	Price
	1,000 pounds	*1,000 pounds*	*1,000 pounds*	*Dollars per pound*
United States	61	70	79	5.10
Brazil	12	77	13	2.23
Belgium–Luxembourg	(1)	7	2	5.00
France	8	26	13	7.15
Switzerland	1	—	2	9.50
United Kingdom	41	53	26	3.88
Hungary	2	2	2	5.00
Mainland China	28	51	26	1.65
Other	6	7	7	4.70
Total	159	293	170	4.29

[1] Negligible.

The Potential For Expanding Exports to Europe

Price and Quality Considerations

The price and quality of U.S. mint oil changes considerably from year to year. Stability of price and quality is one of the prime concerns of end users in the major European markets that were surveyed.

For example, between 1960 and 1970 the average price of U.S. peppermint oil exports varied from a low of $4.62 per pound to a high of $6.22, a difference of $1.60. In some cases the change was over 50 cents a pound from 1 year to the next. Spearmint oil undergoes equal fluctuations. When the price suddenly jumps, some end users turn to other flavors. In addition, there is undoubtedly a breakpoint price above which all customers will cease to purchase U.S. products. Other flavors and synthetics are available and, as has been shown, the overseas market, at least in Europe, is extremely price conscious and does not hesitate to use low-quality flavors either alone or blended with U.S. mint oil, particularly peppermint oil.

Third-Country Factors

At present, the most important competitive country for U.S. mint oil is Brazil. Brazil's peppermint (cornmint) oil production has increased as follows:

Year	Amount
	1,000 pounds
1961	2,224
1962	3,302
1963	1,321
1964	1,861
1965	2,216
1966	3,192
1967	8,860
1968	6,197
1969 [1]	7,505
1970 [2]	9,000

[1] Preliminary
[2] Estimated

Practically all Brazil's mint is grown in the State of Parana, in the southwestern part of the country. Exports have grown steadily (Table 6). According to Brazil's official export statistics, The Republic of China, (Taiwan) is the No. 1 destination. However, much of the oil reaching Taiwan is reexported to Japan. In 1969 (the last complete year available), West Germany, France, the United States, the Netherlands, and Spain were other important destinations (Table 23). Brazil can be expected to continue to expand output. The market for menthol is good. The byproduct, cornmint, has found a ready outlet overseas. However, since Brazil's cornmint is only partially competitive with U.S. peppermint, the effect on U.S. exports is, and will continue to be, limited.

A large number of other countries produce mint oil for export in relatively small quantities. Russia, for instance, produces mint and can expand production, but consumer demand also is growing domestically and will absorb much of the future growth. Most other countries have not been increasing production and all have difficulty competing with the United States and Brazil. Unless the U.S. price becomes too high, third-country competition should remain in check.

Problems

The greatest obstacle to increasing U.S. mint oil exports is the fact that demand for mint is limited by the demand for the final products because mint oil is used mainly as an ingredient in such products as toothpaste and chewing gum. Thus, the demand for this oil is a derived demand, since only a certain amount can be used in a given amount of chewing gum or toothpaste. In addition, demand for peppermint oil is somewhat elastic and some substitution can be made. Other problems include supply stoppages caused by strikes, high weed content in the oil following wet seasons, and rising costs.

Anticipated Exports

U.S. mint oil exports to Europe have been increasing at a rate of over 3 percent per year. The United States anti-inflation program including the readjustment of international currencies will have a bearing on future U.S. prices. According to the elasticities indicated for U.S. oils, a drop in the effective price of U.S. peppermint oil due to currency adjustments would result in an even larger percentage increase in the quantity exported to Western Europe. New uses also could be found for mint oil or other changes could occur. However, assuming no major unexpected influences, the rate of increase is expected to be a little faster in the next few years. Anticipated exports of U.S. peppermint oil to Europe could reach about an annual average of 1.2 million pounds in 1975 and spearmint oil could total 375,000 (Table 22).

Conclusions

The U.S. mint oil industry is highly concentrated. There are only four major exporting firms outside of companies having subsidiaries overseas. The overseas industry also is concentrated and the outlets are fairly well established. The requirements of U.S. overseas customers are technical and exacting.

Since the demand for mint oil is a derived demand, it would appear that the proper course for the U.S. industry is to closely tailor its product to fit the requirements of its overseas markets. It should continue to find ways to cut costs through research and technological advancement. It should assure adequate supplies of U.S. oils at reasonably stable prices and qualities. If these criteria are met, the United States should easily maintain its place as the world's leading mint grower and exporter and may even lengthen its lead.

Table 21.—Peppermint oil: Average West German import prices, by country of origin, 1966–70

[Dollars per pound]

Country of origin	1966	1967	1968	1969	1970
Bulgaria	6.75	6.25	5.75	7.25	7.75
Hungary	7.25	....	6.75	....	7.25
France	6.75	8.00	7.25	6.25	6.50
United States	6.25	6.50	6.00	6.00	5.75
Netherlands	6.25	5.00	2.00	....	4.50
United Kingdom	6.25	7.25	6.75	5.25	4.25
Republic of China, Taiwan	2.50	2.25	2.50	2.50	3.25
Switzerland	3.50	3.00	3.25	2.25	2.75
Japan	2.75	2.75	2.75	2.50	2.50
People's Republic of China	1.75	1.50	1.75	1.75	1.75
Brazil	1.50	1.25	1.25	1.25	1.50

Table 22.—Mint oil: U.S. exports to selected European markets, by type, averages 1962–66 and 1967–70 and projected 1975

[In 1,000 pounds]

Type of oil and country	Average		Projected 1975
	1962–66	1967–70	
Peppermint:			
Belgium-Luxembourg	9.6	5.0	10.0
France	176.0	252.4	350.0
West Germany	149.7	95.0	125.0
Italy	32.4	48.2	60.0
Netherlands	51.1	55.8	65.0
Total EC	418.8	456.4	610.0
United Kingdom	331.3	394.4	450.0
Sweden	18.7	15.8	20.0
Switzerland	21.2	34.0	50.0
Other	27.2	43.1	70.0
Total Europe	817.2	943.7	1,200.0
Spearmint:			
Belgium-Luxembourg	2.6	1.8	2.5
France	46.1	75.8	100.0
West Germany	19.4	31.6	45.0
Italy	12.7	34.5	50.0
Netherlands	11.1	13.9	16.0
Total EC	91.9	157.6	213.5
United Kingdom	140.2	115.0	147.3
Sweden	1.4	1.5	1.7
Switzerland	3.1	3.3	3.5
Other	4.0	6.3	9.0
Total Europe	240.6	283.7	375.0

Table 23.—Peppermint oil: Brazilian exports, by country of destination, 1966–70

[In pounds]

Country	1966	1967	1968	1969	1970 [1]
North America:					
Canada	....	3,571	3,572	2,205	2,205
Mexico	5,026	4,784	11,111	11,023	19,841
United States	426,634	323,062	281,748	324,076	275,575
Total North America	431,660	331,417	296,431	337,304	297,621
South America:					
Argentina	....	11,023	....	...	2,205
Chile	3,638	3,826	7,253	6,614	8,818
Paraguay	24,361	882	...	2,205	15,432
Uruguay	1,984	794	1,587	2,205	....
Total South America	29,983	16,525	8,840	11,024	26,455
Western Europe:					
Belgium-Luxembourg	58,334	3,968	....	....	....
France	243,275	494,313	465,102	533,513	579,810
West Germany	129,664	570,546	383,673	570,991	418,874
Italy	....	2,381	....	6,614	2,205
Netherlands	29,361	132,188	156,408	160,936	180,777
Spain	....	100,001	196,650	158,731	19,841
Switzerland	....	....	1,190	2,205	2,205
United Kingdom	222,587	376,340	402,684	257,938	443,125
Total Western Europe	683,221	1,679,737	1,605,707	1,690,928	1,646,837
Eastern Europe:					
Bulgaria	....	99,604	188,097	90,389	33,069
Czechoslovakia	46,032	36,905	39,286	46,297	46,297
East Germany	20,238	57,937	....	44,092	30,864
Hungary	....	44,048	....	4,409	....
Yugoslavia	11,111	22,222	22,222	....	....
Total Eastern Europe	77,381	260,716	249,605	185,187	110,230
Asia and Oceania:					
Australia	....	....	....	13,227	....
Republic of China, Taiwan	385,113	598,750	638,020	956,796	529,104
Hong Kong	52,436	101,041	71,429	59,524	46,297
India	57,937	38,492	....	4,409	6,614
Israel	....	....	4,762	8,818	....
Singapore	10,935	....	....	6,614	....
South Vietnam	....	....		....	....
Thailand	7,937	....		....	....
Total Asia and Oceania	514,358	738,283	714,211	1,049,388	582,015
Grand total	1,736,603	3,026,678	2,874,794	3,273,831	2,663,158

[1] January–September only.

Appendix

Trade Associations, Exporters, & Importers of U.S. Mint Oil

Trade Associations

United States

Essential Oil Association of U.S.A., Inc.
Executive Offices
60 East 42nd Street
New York, New York 10017
Cylde T. Nissen, Executive Secretary

Northwest Spearmint Marketing Association
P.O. Box 691
Sunnyside, Washington 98944
Gerald Williams, Manager

France

Chamber of Commerce
38 Cours Albert
Paris, 8

West Germany

Bremen Chamber of Commerce
Am Markt 13
2800 Bremen

Verband Deutcher Kiechstoff-Fabriken
Schliessfach 94
Holzminden

Hamburg Chamber of Commerce
Borse
2000 Hamburg 11

United Kingdom

London Chamber of Commerce
69 Cannon Street
London, E.C. 4

Essential Oil Importers' Secretariat
c/o P. Samuelson & Co., Ltd.
44 Paul Street
London, E.C. 2
A. H. Samuelson, Chairman

Flavoring Compound Manufacturers of Great Britain
696 Cannon Street
London, E.C. 4
W. M. Young, Secretary

Other Europe

CIDESCO (Comite Int'l d'Esthetique et de Cosmetologie)
40, rue Blanche
Bruxelles 5, Belgium
G. Dumont, General Secretary

Foreign Trade Corporation
Koostol
47 Dukelskych, Hrdine
815 Prague, Czechoslovakia

International Aerosol Association
Waisenhausstrasse 2
Zurich 1, Switzerland
Max Murbach, President

NAHRUNG
P. O. Box 1503
Schicklerstrasse 7
East Berlin, DDR 102
East Germany

POLCOOP
P. O. Box Warsaw 199
U 1 Copernika
Warsaw, Poland

[1] This is a partial list, and inclusion does not constitute endorsement by the U. S. Government.

Exporters

M. Brown and Sons, Inc.
Bremen, Indiana 46600

I. P. Callison and Sons, Inc.
Chehalis, Washington 98532

Wm. Leman, Inc.
116 No. Center Street
Bremen, Indiana 46506

Hotchkiss Company
Lyons, New York 14489

A. M. Todd Company
1717 Douglas Avenue
(P. O. #711)
Kalamazoo, Michigan 49007

Importers

France

Ets. Albert Berthier and Fils
27, rue des Petites—Ecuries
Paris 10

Ets. Gibbs
10 Impasse de la Montjoie
La Plaine St. Denis

Ets. Krema
283, rue de Kosny, Montreuil

Ets. Ravand-Mouscadet
18, rue Volney, Paris 2

Ets. Isnard
36, rue Massenet, Vincennes

Union of Essential Oil Importers
Societe Marcel Quarre
26, Place St. Georges, Paris 9

West Germany

Paul Kaders
Schauenbeugerstr. 21
Hamburg 1

C. Melchers and Company
Steindamm 48a
Bremenlesun (Bremen)

Netherlands

N. C. Cosmetische Fabriek Prodenta
Brabanstraat 17, Amersfoort

International Flavors and Fragrances
Lieberweg 72, Hilversuu

Van Nelle-Adams N.V.
Van Nelleweg 1, Rotterdam

Jean A. duCrocqu, Jr., N.V.
P. O. Box 6
Huizen

United Kingdom

Allen, Stafford & Sons, Ltd.
Carpenters Road, Stratford
London E. 15

Bush, W. J. & Co., Ltd.
Ash Grove, Hackney, London E. 8

Daniel, H. E., Ltd.
St. Bernard Works
Stoney Lane, Upper Norwood
London S.E. 1

Fritzsche Bros., Ltd.
9 St. Cross St. (Hatton Garden)
London E.C. 1

Beecham Toiletry Products
Cox Green
Maidenhead, Berkshire

Proprietary Perfumes Ltd.
Ashford, Kent

Starke, Bruce & Co., Ltd.
Ashley House
96 Hatton Garden
London E.C. 1

Stephens Bros. & Banner Ltd.
Power Road, London W. 4

[2] Only local dealers who export are included. Several other exporters are members of the Essential Oil Association of U.S.A., Inc. A list of members can be obtained by writing to the address of the Association as shown in the list of Trade Associations.

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C. 20250

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
AGRICULTURE
AGR 101

FIRST CLASS

U.S.MAIL

PLEASE NOTE: First Class least expensive under PL 91-375, May 16, 1971

If you no longer need this publication, check here ____ and return this sheet and/or envelope in which it was mailed and your name will be dropped from mailing list.

If your address should be changed ____ PRINT OR TYPE the new address, including ZIP CODE and return the whole sheet and/or envelope to:

FOREIGN AGRICULTURAL SERVICE, Room 5918 So.
U. S. Department of Agriculture
Washington, D. C. 20250

FAS M-244